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(56) Documents Cited
WO 82/04185 A1 DE 003248152 A1 US 4690671 A
US 4424054 A US 4312348 A

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(54) Tampon applicator

(57) A tampon applicator (10) comprises an inner part (12) containing a tampon (24), the inner part being telescopically received within an outer part (14). The upper ends (16, 20) of the inner and outer parts comprise internal and external frangible walls between which is arranged an additive, eg. a lubricant gel (46). The tampon is retained by a lug (50). In use, the inner part is drawn downwardly to break the internal frangible wall and release the gel onto the tampon. The inner part is then telescoped into the outer part, thereby forcing the tampon upwardly to pass through the gel and be ejected through the frangible end.

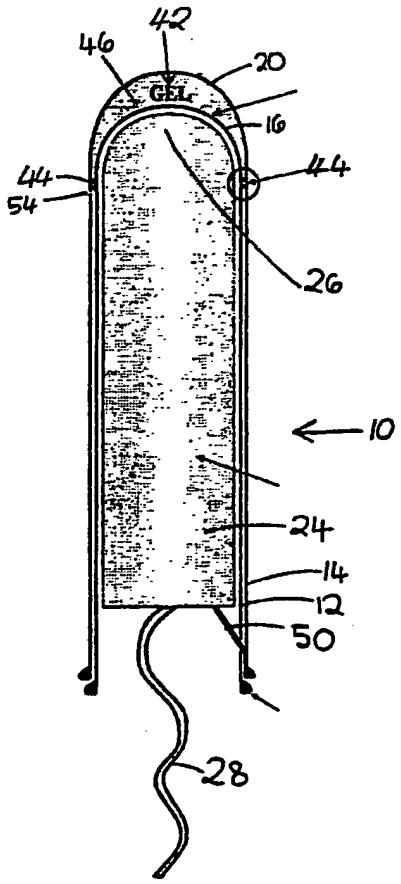

FIG. 4

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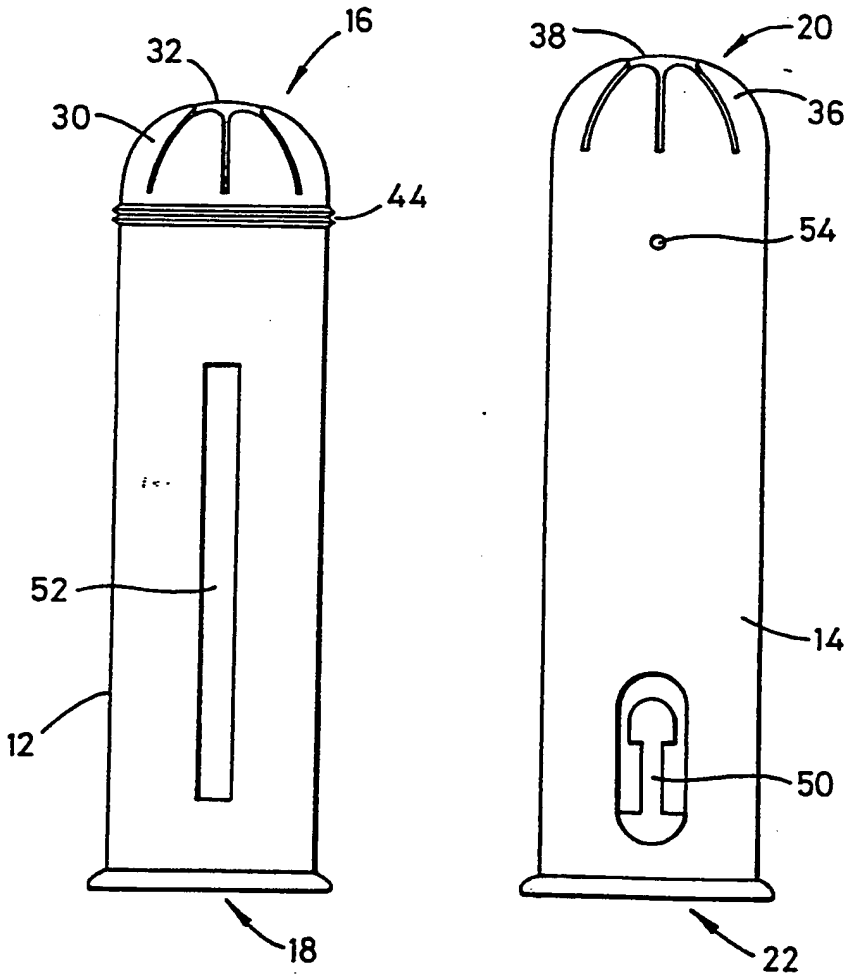


FIG. 1

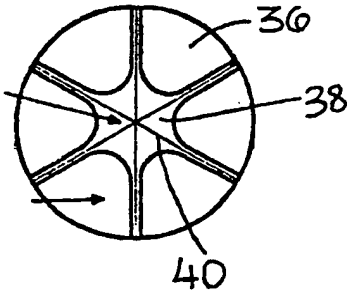


FIG. 2

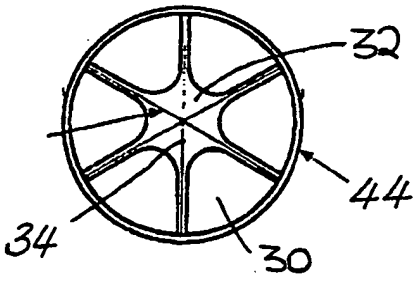


FIG. 3

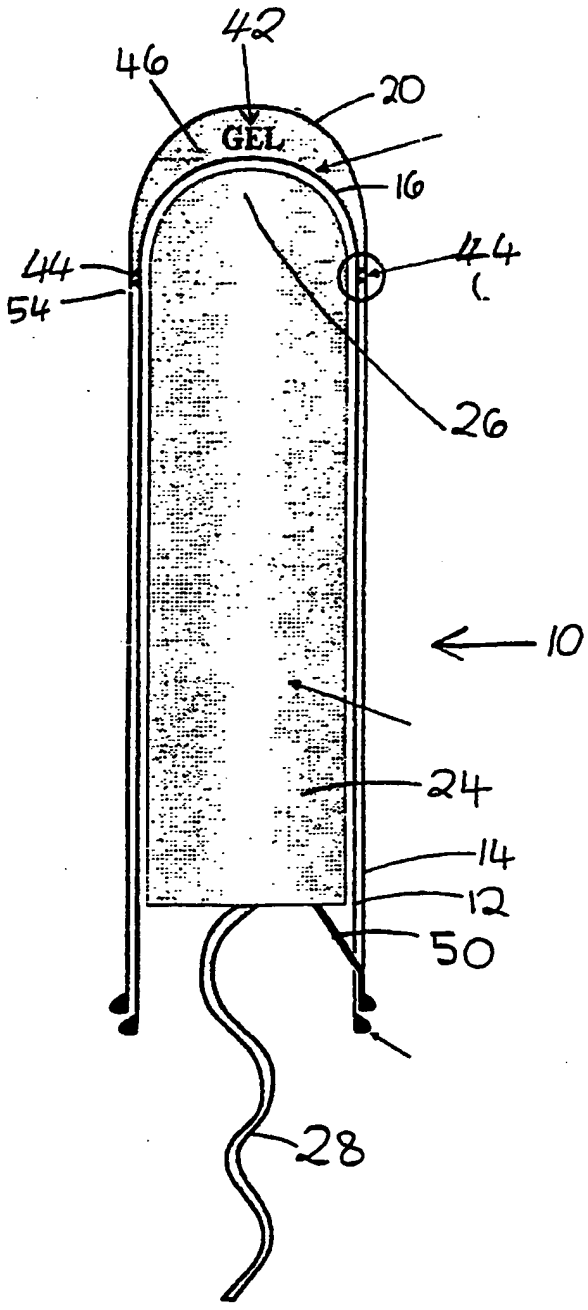
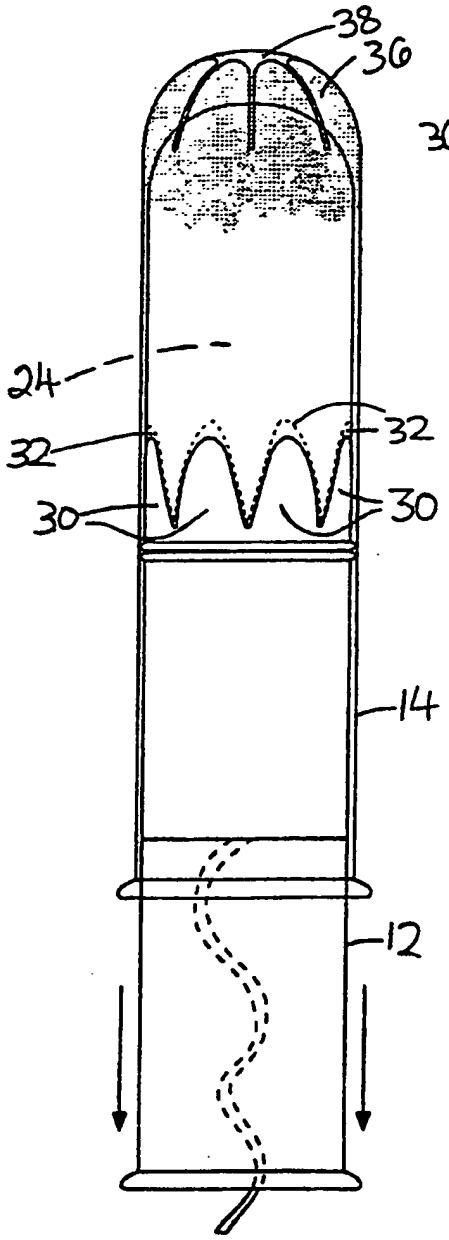


FIG. 4

FIG. 5



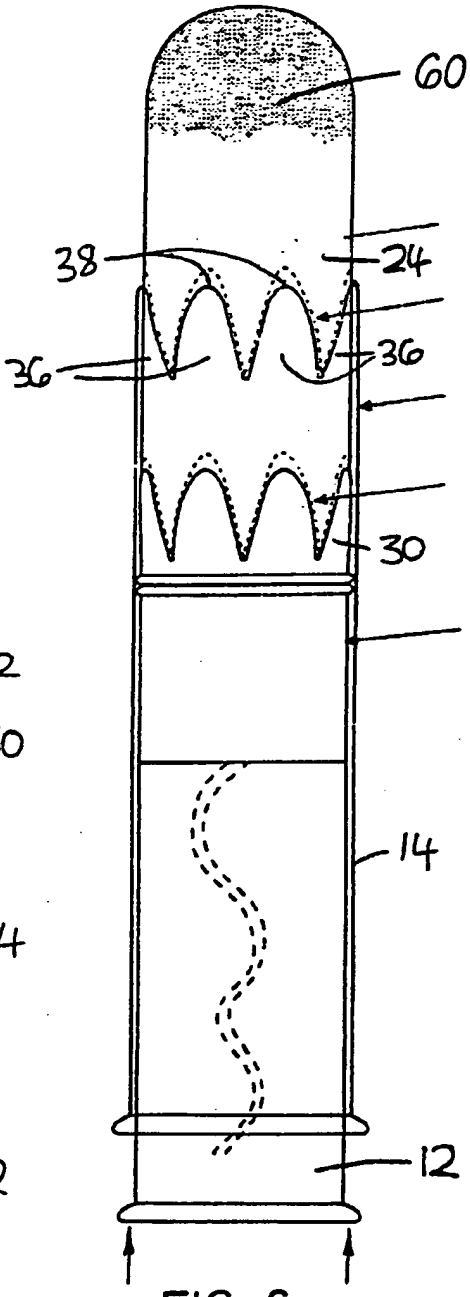


FIG. 6

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TAMPON APPLICATOR

This invention relates to a tampon applicator.

Tampon applicators for aiding vaginal insertion of a tampon are known in the art. Such applicators are generally intended to be disposable, and are designed to be mechanically simple, efficient to use, and cheap to manufacture.

In a first aspect, the invention provides an applicator for a tampon, the applicator comprising means for receiving a said tampon and for presenting the tampon for use when the applicator is operated, a region for containing an additive for application to the tampon, and means for releasing or depositing the contents of said region on to the tampon when the applicator is operated.

Preferably, the additive is in the form of a gel, or a fluid, or a powder, or a combination of any of these.

For example, the additive may comprise a lubricant which, when the applicator is operated, is released on to the surface of the tampon. The lubricant may be in the form of a gel. The applicants have appreciated that the application of a lubricant on to the tampon can offer significant advantages in terms of comfort and of ease of insertion of the tampon into the vagina during menstruation.

The additive may be medicated. The additive may also or alternatively be scented.

As a further example, the additive may comprise talcum powder.

Preferably, the region for containing the additive is substantially sealed from the means for containing the

tampon at least prior to operation of the applicator, in order to prevent the contents of said region from leaking on to, or soaking into, the tampon before the tampon is used.

Preferably, said region is defined at least partly by an internal frangible wall adjacent to the tampon with which the applicator is used, the wall breaking during operation of the applicator to release the contents on to the tampon.

Preferably, the region for containing the additive is substantially sealed from the external atmosphere at least prior to operation of the applicator, in order to prevent the contents of said region from leaking away or from being contaminated by external contaminants.

Preferably, the said region is defined at least partly by an external frangible wall which separates the region from the external atmosphere, the frangible wall breaking during operation of the applicator.

Preferably, the means for depositing or releasing the contents of said region on to the tampon comprises means for passing the tampon through said region when the applicator is operated. Preferably, such means comprise a telescopic arrangement with jaws, or with means which in use form jaws, for gripping the tampon to move the tampon relative to said region when the arrangement is telescoped. Preferably, the jaws are ratchet jaws for sliding relative to the tampon when the telescopic arrangement is initially extended.

Preferably, the telescopic arrangement comprises an inner part and an outer part, the upper end of the inner part comprising the aforementioned internal frangible wall, the wall being divided into sections to form the aforementioned ratchet jaws when the wall breaks.

Preferably, the sections of the frangible wall are divided by tear lines of reduced strength. Preferably each section

comprises a relatively thick central portion surrounded by a relatively thin web portion. Preferably, the sections together form a dome shape.

Preferably, the applicator further comprises means for restraining movement of the tampon when the applicator is extended. The restraining means may comprise a lug for engaging the tampon, the lug extending from the outer part through a longitudinal slot in the inner part to permit telescopic movement of the inner part relative to the outer part.

In preferred embodiment the applicator comprises an inner part and an outer part, said region being defined between the ends of the inner and outer parts, the applicator further comprising means for holding the tampon with which the applicator is used stationary relative to the outer part when the inner part is withdrawn, means for rupturing the region when the inner part is withdrawn to release the contents of said region on to the tampon, and means on the inner part for gripping the tampon to urge the tampon to break through the end of the outer part when the inner part is pushed back into the outer part.

Preferably, means are provided on one of the inner and outer parts to seal between the parts. Such means may comprise one or more annular flanges. Preferably, an air hole is formed in the outer part to permit pressure equalisation when the inner part is extended or telescoped relative to the outer part.

In a closely related second aspect, the invention provides an applicator for a tampon, the applicator comprising means for receiving a said tampon and for presenting the tampon for use when the applicator is operated, an additive contained in a region of the applicator, and means for releasing or depositing the additive onto the tampon when the applicator is operated. The applicator may comprise any

of the features as described above.

In a third aspect, the invention also relates to a tampon in combination with an applicator as described above.

An embodiment of the invention is now described by way of example, with reference to the accompanying drawings, in which :-

Fig. 1 shows inner and outer parts of a tampon applicator side-by-side in isolation;

Fig. 2 is a plan view from above of the outer part shown in Fig. 1;

Fig. 3 is a plan view from above of the inner part shown in Fig. 1;

Fig. 4 is a transverse section through the tampon applicator prior to operation;

Fig. 5 is a schematic section through the applicator during a first phase of operation; and

Fig. 6 is a schematic section through the applicator during a second phase of operation.

Referring to the drawings, a tampon applicator 10 comprises a tubular inner part 12 and a tubular outer part 14, both of plastics. The inner part has a closed upper end 16 and an open lower end 18. Similarly, the outer part 14 has a closed upper end 20 and an open lower end 22. The inner part 12 is dimensioned to be telescopically slidable within the outer part 14. A cotton tampon 24 having a conventional rounded upper end 26 and also having a pull-string 28, is received within the inner part 12.

The upper end 16 of the inner part 12 is generally dome-

shaped, and consists of six arcuate petal portions 30 which are separated by an integral web 32 of a thin plastics film, of about 0.003 inches in thickness. Six score lines 34 are provided between adjacent petal portions 30 to define weakened tear lines along which the upper end 16 will rupture when the applicator is operated.

The upper end 20 of the outer part 12 also is generally dome-shaped, and consists of six arcuate petal portions 36 separated by a thin film web 38 in which are formed six tear lines 40. The thickness of the thin web 38 is about 0.002 inches so that it is slightly weaker than the web 32 of the inner part 12.

As best seen in Fig. 4, the upper ends 16 and 20 of the inner and outer parts 12 and 14 together define a closed internal region 42 at the upper end of the applicator. One or more annular flanges 44 (two flanges in this exemplary embodiment) are provided on the outer surface of the inner part 12 adjacent to the upper end 16 to seal against the inner surface of the outer part 14. The region 42 is substantially air-tight and liquid-tight, and is intended to contain an additive for application to the tampon when the applicator is operated. In this embodiment, a water soluble lubricant gel 46 is placed within the region 42.

To assemble the applicator 10, the gel 46 is first arranged within the outer part 14 adjacent to the upper end 20. The inner part 12 is advanced into the outer part 14. A resilient lug 50 extends inwardly and upwardly from the lower end 22 of the outer part 14. As the inner part 12 is advanced upwardly, the lug 50 engages in a longitudinal slot 52 formed in the wall of the inner part 12, and projects therethrough towards the interior of the inner part 12. A small air hole 54 is provided in the wall of the outer part 14 near the upper end 20, to permit air trapped between the inner and outer parts 12 and 14 to escape as the inner part is moved upwardly. The air hole 54 is positioned such that

when the inner part is in its uppermost position as defined by the lug 50 abutting the lower end 51 of the slot 54, the sealing flanges 44 engage above the air hole 54 thereby to seal the region 42. Finally, the tampon 24 is pressed into the interior of the inner part 12 from the open lower end 18. The lug 50 flexes while the tampon 24 is being inserted, and then it springs back to engage under the lower end of the tampon to prevent the tampon from falling out of the applicator 10.

As best seen in Fig. 4, the lower end 18 of the inner part 12 projects slightly below the lower end 22 of the outer part 14. Referring firstly to Fig. 5, to operate the applicator, a person firstly pulls the inner part 12 downwardly while holding steady the outer part 14. As the inner part 12 begins to move downwardly, its upper end 16 presses against the upper end of the tampon 24. The tampon 24 is restrained from moving by the lug 50, and the resultant force quickly causes the thin web 32 of the upper end 16 to rupture along the tear lines 34. The petal portions 30 flex outwardly and slide over the surface of the tampon 24 as the inner part 12 is withdrawn downwardly.

The gel 46 in the upper end of the applicator is thus released on to the end of the tampon 24. The air hole 54 permits air to enter the applicator to prevent a pressure reduction within the outer part 14 which could rupture the thin web 38 of the outer part 14 prematurely.

Once the inner part 12 has been withdrawn to its maximum extent as defined by the lug 50 abutting the upper end 53 of the slot 52, the person then pushes the inner part 12 back into the outer part 14. Referring to Fig. 6, as the inner part 12 begins to move upwardly, the edges of the petal portions 30 and the surrounding split-apart areas of the thin web 32 bite into the soft surface of the tampon 24, thereby to grip the tampon 24 and to urge the tampon 24 upwardly as the inner part 12 is advanced. The tampon 24 is

thus pressed into the gel 46 to bear against the upper end 20 of the outer part 14. The resultant force quickly ruptures the thin web 38 of the outer end 20 along the tear lines 40. The petal portions 36 of the outer part 14 flex outwardly to permit the tampon 24 to be ejected through the upper end 22 of the outer part 14.

As the tampon 24 is pushed upwardly, the gel 46 spreads over surface of the upper portion (typically the upper eighth, upper quarter, the upper third, or the upper half) of the tampon 24, to provide a lubricant coating 60 on the tampon 24. In this embodiment, the gel covers between about the top eighth and the top fifth of the tampon 24.

It will be appreciated that the petal portions 30 of the upper end 16 of the inner part 12 perform several functions. Initially, before the applicator has been operated, the petal portions 30 and the web 32 are integrally joined to form a frangible wall separating the gel 46 from the tampon 24. When the applicator is operated, this frangible wall breaks apart to release the gel 46 onto the tampon 24. Further, once the frangible wall has broken apart, the petal portions 30 and the surrounding split-apart areas of the thin web 32 act as ratchet jaws. On drawing the inner part 12 downwardly, these ratchet jaws slide over the surface of the tampon 24, and on telescoping the inner part 12 upwardly back into the outer part 14, these ratchet jaws grip the tampon 24 to urge it upwardly.

In this embodiment, the size and thickness of the petal portions 30, 36, of the thin webs 32, 38 and of the tear lines 34, 40 of the inner and outer parts 12, 14 respectively, are such as to provide adequate strength against breakage during packaging and transportation, but also to ensure reliable rupture of the tear lines when the applicator is operated. The web 32 of the inner part 12 is slightly weaker than the web 38 of the outer part 14 to ensure that when the inner part 12 is pulled downwardly, the

web 38 of the outer part 14 will remain intact. The dome-shape of the ends 16 and 18 provides strength against the webs 32 and 38 and the petal portions 30 and 36 collapsing inwardly, while permitting the webs and the petal portions to rupture outwardly during operation of the applicator.

It will be appreciated that with this embodiment, the tampon is presented with a user-friendly water soluble gel coating to facilitate comfortable insertion into the vagina. Prior to use, the gel is maintained in a region sealed from the external atmosphere to prevent contamination and to preserve the sterility of the gel. The gel is also kept separate from the tampon to prevent the gel from soaking into the tampon prior to use. The applicator is simple to use, and is efficient to manufacture.

Although the preferred embodiment employs a lubricant gel for application to the tampon, it will be appreciated that other additives in the form of gels, powders or fluids could be contained within the applicator. For example, such additives may be lubricative and/or medicated and/or scented. In one form, talcum powder may be used. It will also be appreciated that other techniques could also be used for releasing, depositing or dispensing the additive on to the tampon when the applicator is operated.

The above description is representative of an exemplary embodiment of the invention; modifications of detail may be made within the scope and principles of the invention.

CLAIMS

1. An applicator for a tampon, the applicator comprising means for receiving a said tampon and for presenting the tampon for use when the applicator is operated, a region for containing an additive for application to the tampon, and means for releasing or depositing the contents of said region onto the tampon when the applicator is operated.

2. An applicator for a tampon, the applicator comprising means for receiving a said tampon and for presenting the tampon for use when the applicator is operated, an additive contained in a region of the applicator, and means for releasing or depositing the additive onto the tampon when the applicator is operated.

3. An applicator according to claim 2, wherein the additive comprises a lubricant.

4. An applicator according to claim 2 or 3, wherein the additive comprises a gel.

5. An applicator according to any preceding claim, wherein said region is substantially sealed from the means for containing the tampon at least prior to operation of the applicator.

6. An applicator according to claim 5, wherein said region is defined at least partly by an internal frangible wall adjacent to the tampon with which the applicator is used, the wall breaking during operation of the applicator to release the contents of said region onto the tampon.

7. An applicator according to any preceding claim, wherein said region is substantially sealed from the external atmosphere at least prior to operation of the applicator.

8. An applicator according to claim 6, wherein said region is defined at least partly by an external frangible wall

which separates said region from the external atmosphere.

9. An applicator according to any preceding claim, wherein the means for depositing or releasing the contents of said region comprises means for passing the tampon with which the applicator is used through said region when the applicator is operated.

10. An applicator according to claim 9, wherein the application comprises a telescopic arrangement, and wherein said means for passing comprises means to form jaws for gripping the tampon to move the tampon relative to said region when the arrangement is telescoped.

11. An applicator according to claim 10, wherein the means to form jaws comprises means to form ratchet jaws for sliding relative to the tampon when the telescopic arrangement is extended, and for gripping the tampon when the arrangement is telescoped.

12. An applicator according to claim 11, wherein the telescopic arrangement comprises an inner part and an outer part, the inner end of the inner part comprising said internal frangible wall, the wall being divided into sections to form the aforementioned ratchet jaws when the wall breaks.

13. An applicator according to claim 12, wherein the sections of the frangible wall are divided by tear lines of reduced strength.

14. An applicator according to claim 10, 11, 12 or 13 further comprising means for restraining movement of the tampon when the applicator is extended.

15. An applicator according to claim 14, wherein the restraining means comprises a lug for engaging the tampon, the lug extending from the outer part through a longitudinal

slot in the inner part to permit telescopic movement of the inner part relative to the outer part.

16. An applicator according to claim 1, 2, 3 or 4, wherein the applicator comprises an inner part and an outer part, a region being defined between the ends of the inner and outer parts, the applicator further comprising means for holding the tampon with which the applicator is used stationary relative to the outer part when the inner part is withdrawn, means for rupturing the region when the inner part is withdrawn to release the contents of the region on to the tampon, and means on the inner part for gripping the tampon to urge the tampon to break through the end of the outer part when the inner part is pushed back into the outer part.

17. An applicator according to any of claims 10 to 16, further comprising means on one of the inner and outer parts for sealing between the inner and outer parts.

18. An applicator according to claim 17, wherein said means for sealing comprise one or more annular flanges formed on either the inner or the outer part.

19. An applicator according to any of claims 10 to 18, further comprising an air hole formed in the outer part to permit pressure equalisation when the inner part is extended or telescoped relative to the outer part.

20. An assembly comprising a tampon in combination with an applicator as set forth in any preceding claim.

21. A tampon applicator substantially as hereinbefore described with reference to the accompanying drawings.

Patents Act 1977
Examiner's report to the Comptroller under Section 17 (The Search Report) -12-

Application number: GB 9307568.7

Relevant Technical fields

(i) UK Cl (Edition L) A5R (RBM, RPT, RPQ)

(ii) Int Cl (Edition 5) A61F 13/26, 13/28, 13/30

Search Examiner: N FRANKLIN

Databases (see over)

(i) UK Patent Office

(ii) ONLINE DATABASES: WPI

Date of Search: 30 JUNE 1993

Documents considered relevant following a search in respect of claims 1-21

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	WO 82/04185 A1 (KCDP CORPORATION) Note entire document	1, 2 at least
X	US 4690671 (COLEMAN) Note column 4 lines 18-64	1, 2 at least
X	US 4424054 (CONN) Note entire document	1, 2 at least
X	US 4312348 (FRIESE) Note column 1 lines 35-44	1, 2 at least
X	DE 3248152 A1 (SUSTMANN) Note Figures	1, 2 at least

Category	Identity of document and relevant passages -13-	Relevant to claim(s)

Categories of documents

X: Document indicating lack of novelty or of inventive step.

Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.

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E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

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